Laser Data Collection Project
Scanning of Processing Unit for Replacement of Heat Exchangers

Project Scope

The client needs to remove and replace 4 heat exchangers. The majority of the existing piping will remain, while others are to be rerouted. In order to capture the as-built conditions in a safe and timely manner, laser scanning was suggested.

The result from this endeavor is to be a 3D solid model showing the existing equipment, piping, tie-in points, spring-cans, and structural supports in the area. The 3D model will be used by the client’s piping and structural designers to help them route new piping and reroute existing lines.

Figure 1: This image is composed of 21 individual point clouds registered to fit together
Figure 2: Once scans are registered and moved to plant coordinates, 3D modeling can take place

Figure 3: The point cloud is used to model major pipe, flanges, nozzles, etc. that are separated by layers
Figure 4: With the point clouds turned off, you can see all equipment, piping, and supports that were modeled.

Figure 5: Modeling is made easier by working with isolated, smaller clipping boundaries.
Figure 6: A small area that has been scanned is all that is required for 3D modeling to take place.

Figure 7: This image is not a photograph. It shows what is captured by the scanner when viewed with its processing software. It represents the point of view from a scan position setup on top of an elevated deck.